Identifying Coastal Habitats for Conservation Under Sea Level Rise Scenarios

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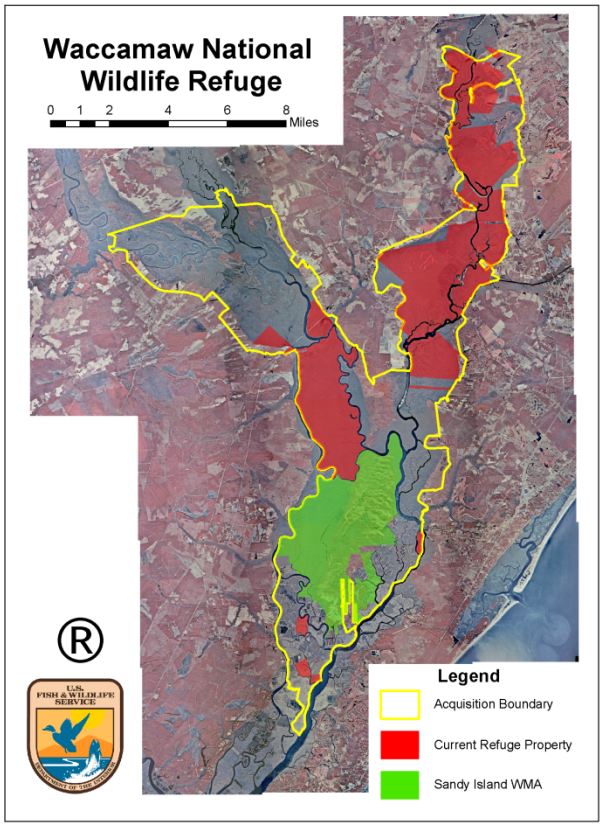
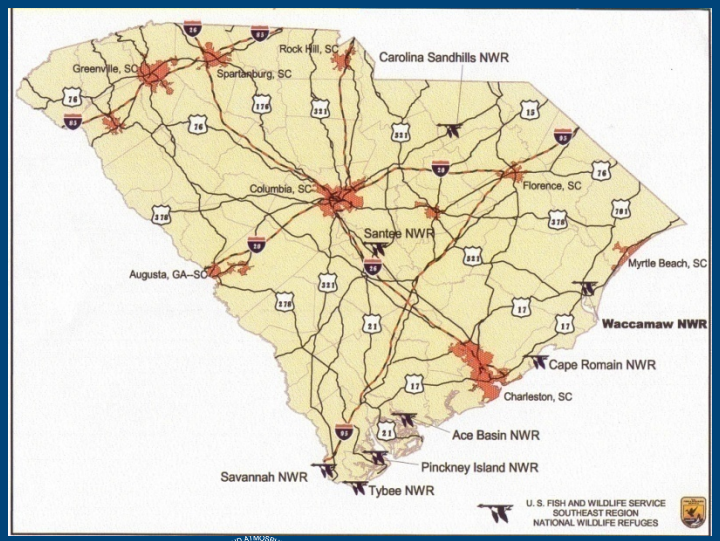
Waccamaw National Wildlife Refuge



From refuge establishment in 1997 to present, USFWS manages 22,869 acres.



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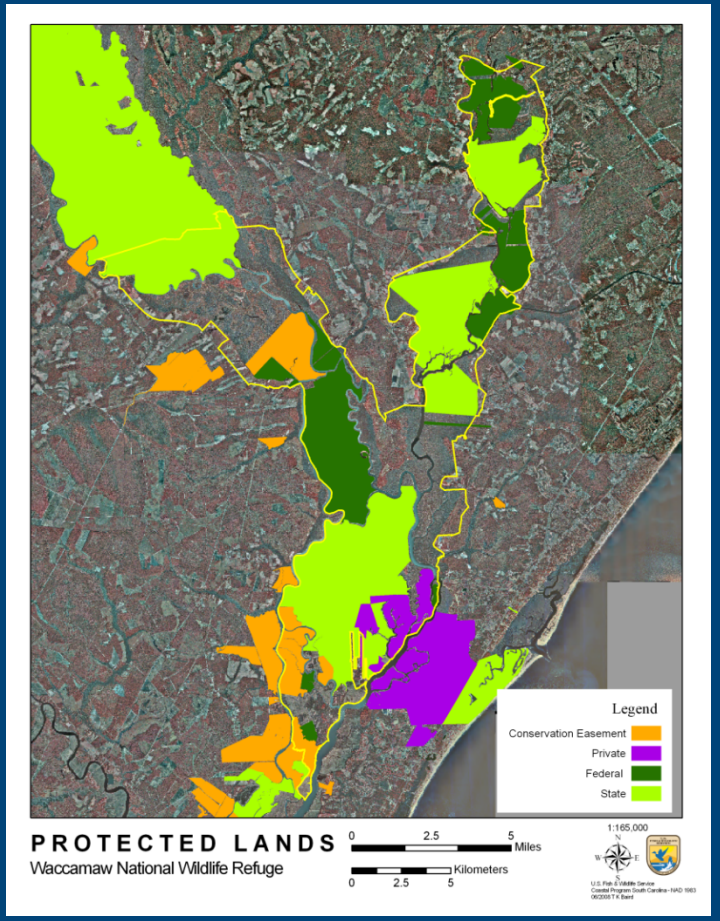
The "Big Picture"
Winyah Bay Focus Area

Waccamaw NWR was proposed by the WBFA Task Force with a specific goal of having a Refuge as a central component of the core conservation area located in the Focus Area.



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Acquisition and Habitat Diversity

- Black Water River Swamp
- Alluvial River Floodplain Forested Wetlands
- Longleaf Pine Ecosystem
- Tidal and Managed Historic Ricefields

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Strategic Habitat Conservation (SHC)

- Swallow-tailed Kites require 100,000 acres of habitat for 80 nesting pairs
- Potential to include Red-cockaded Woodpecker and/or Black Bears
- Long range habitat planning in a rapidly changing environment

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Climate Change Related Threats

- Drought, wildfires
- Unpredictable weather patterns
- Invasive species
- Salt water intrusion, habitat loss

Potential Habitat Loss

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Freshwater Tidal Emergent Wetlands

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Deciduous trees are the first to go

Cypress along river go next

Transitioning from freshwater forested to brackish emergent marsh

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Cypress “bone yard” within a brackish marsh

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A Conservation/Climate Partnership

- Waccamaw National Wildlife Refuge
- NOAA Coastal Services Center
- The Nature Conservancy

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Project Objectives

1. Assess potential sea level rise impacts on coastal habitats

2. Incorporate SLAMM outputs with NOAA's Habitat Priority Planner to identify management strategies

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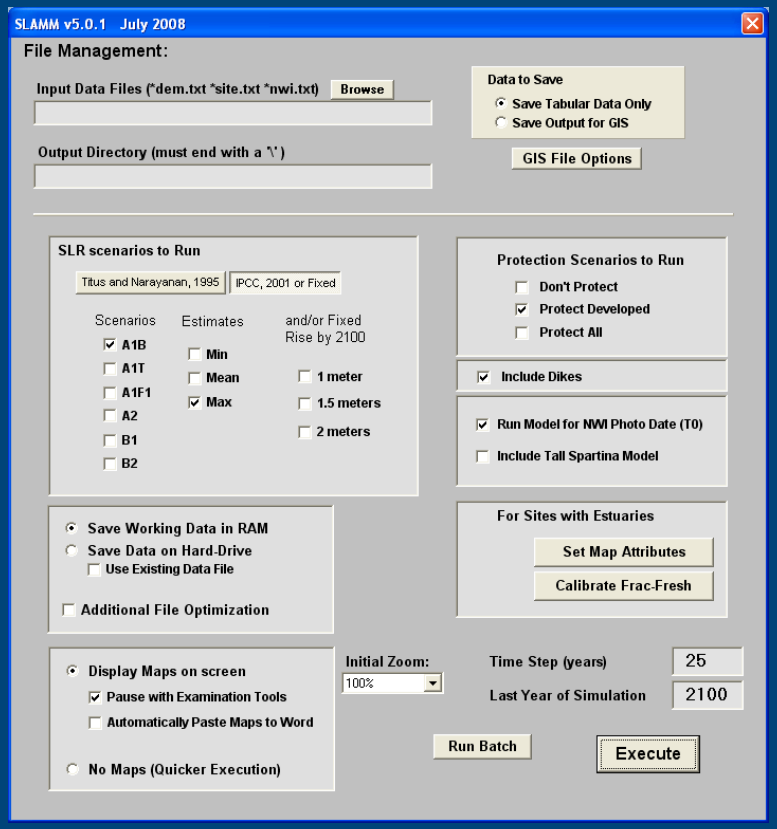
Sea Level Affecting Marshes Model

Custom inputs

- Adjusted LIDAR DEM
- Habitat classification performed by experts, refined with local knowledge
- Accretion rates from Jim Morris' local studies
- Tidal data from local gauges, adjusted with local knowledge



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Habitat Priority Planner (HPP)

Decision support tool guiding management action for

- Conservation, restoration, land use planning

Designed for interactive use with stakeholders

www.csc.noaa.gov/hpp

Requirements:

- ArcGIS 9.2 or 9.3 with Spatial Analyst
- Raster or vector landcover layer
- Site-specific vector data (optional)

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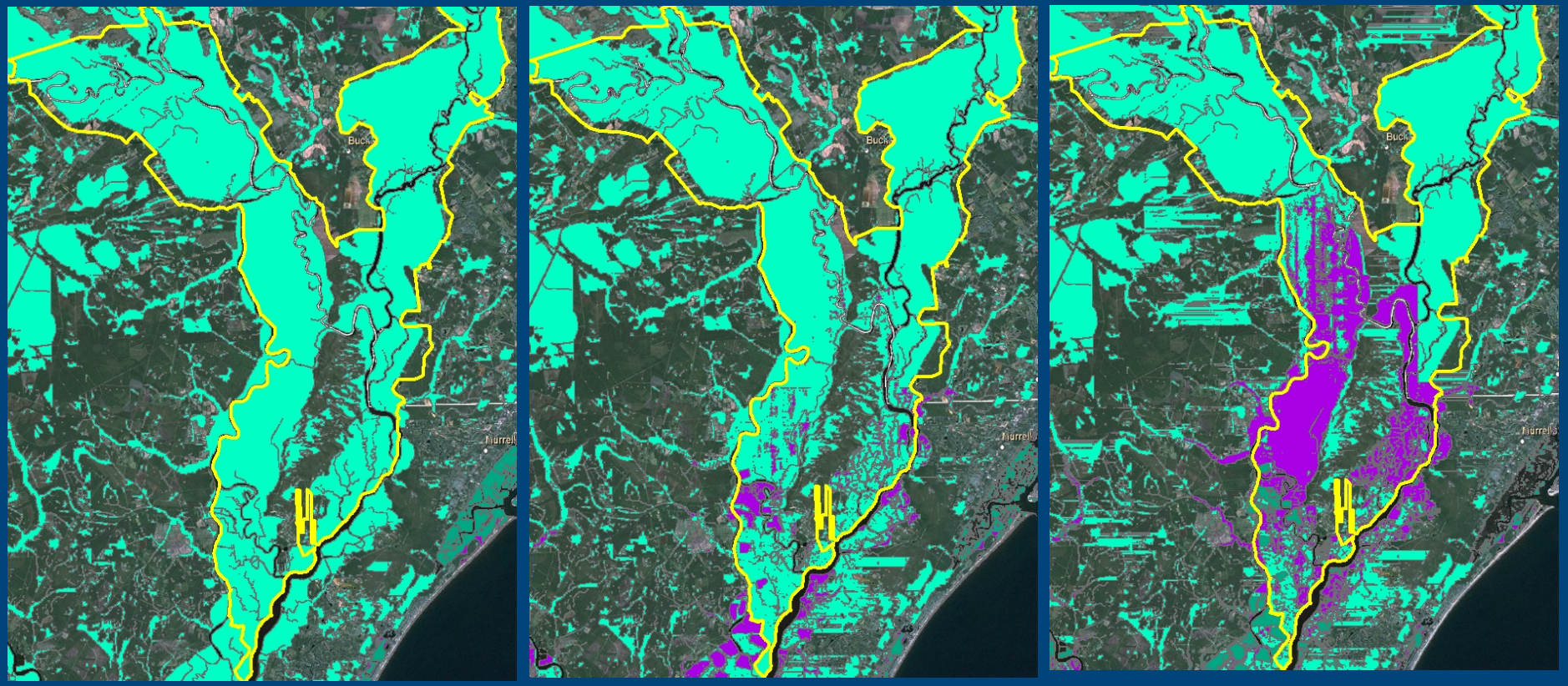
SLAMM Results for Waccamaw NWR

NWI - 1994 | 2025 | 2050



Brackish Marsh
Freshwater Habitats
Saltwater Habitats
Waccamaw NWR boundary

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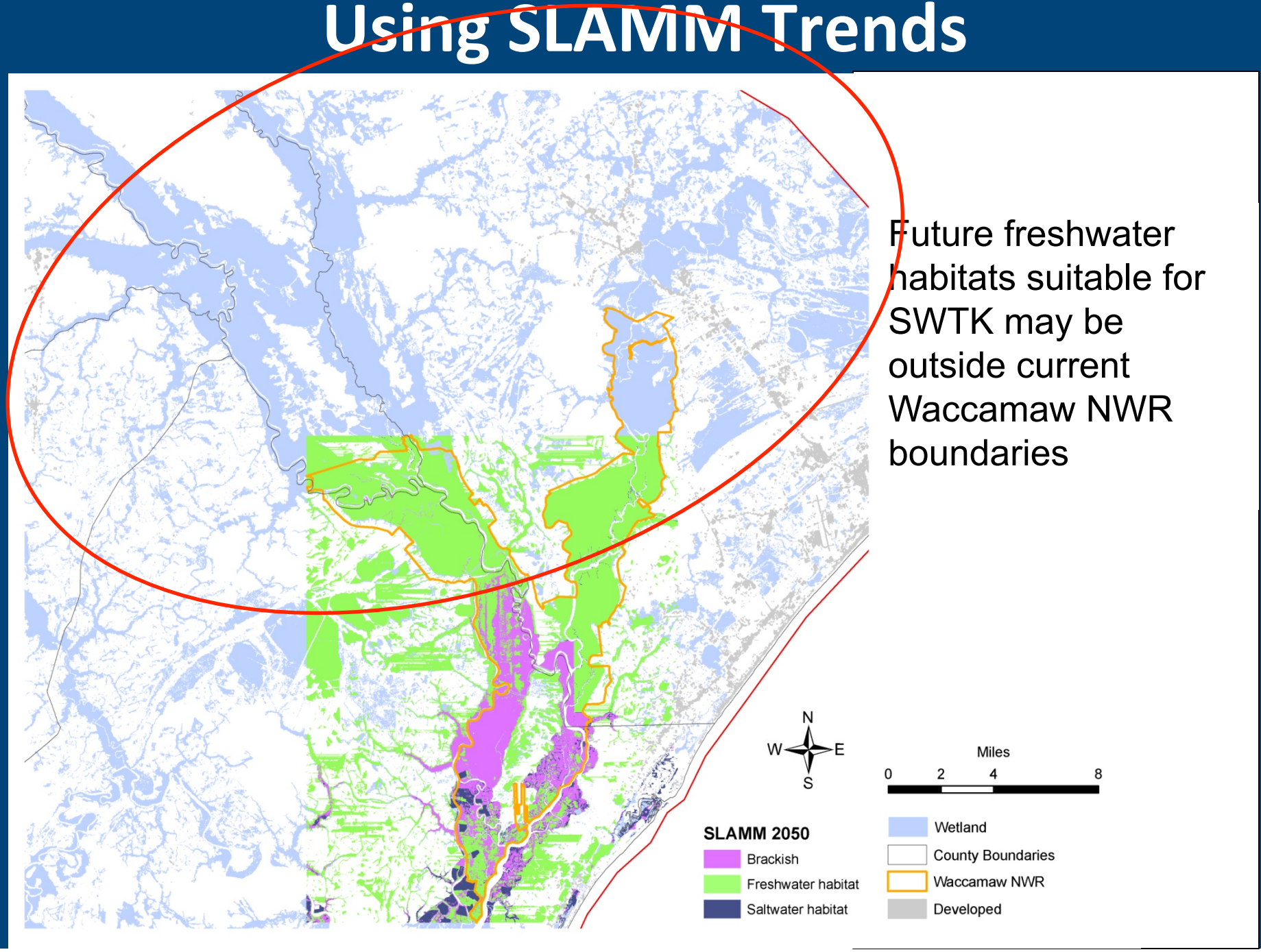
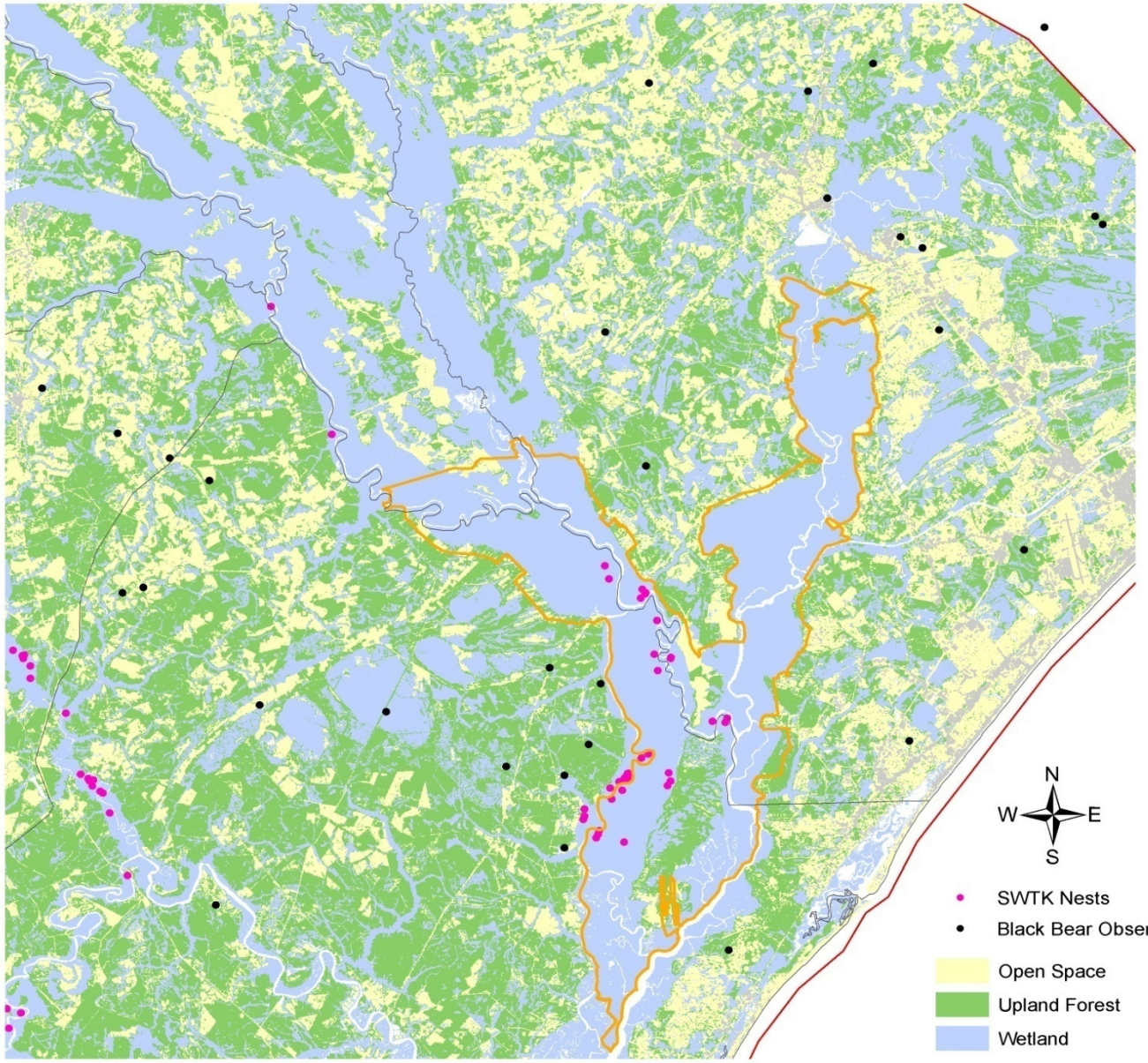
Using SLAMM Trends



Future freshwater habitats suitable for SWTK may be outside current Waccamaw NWR boundaries

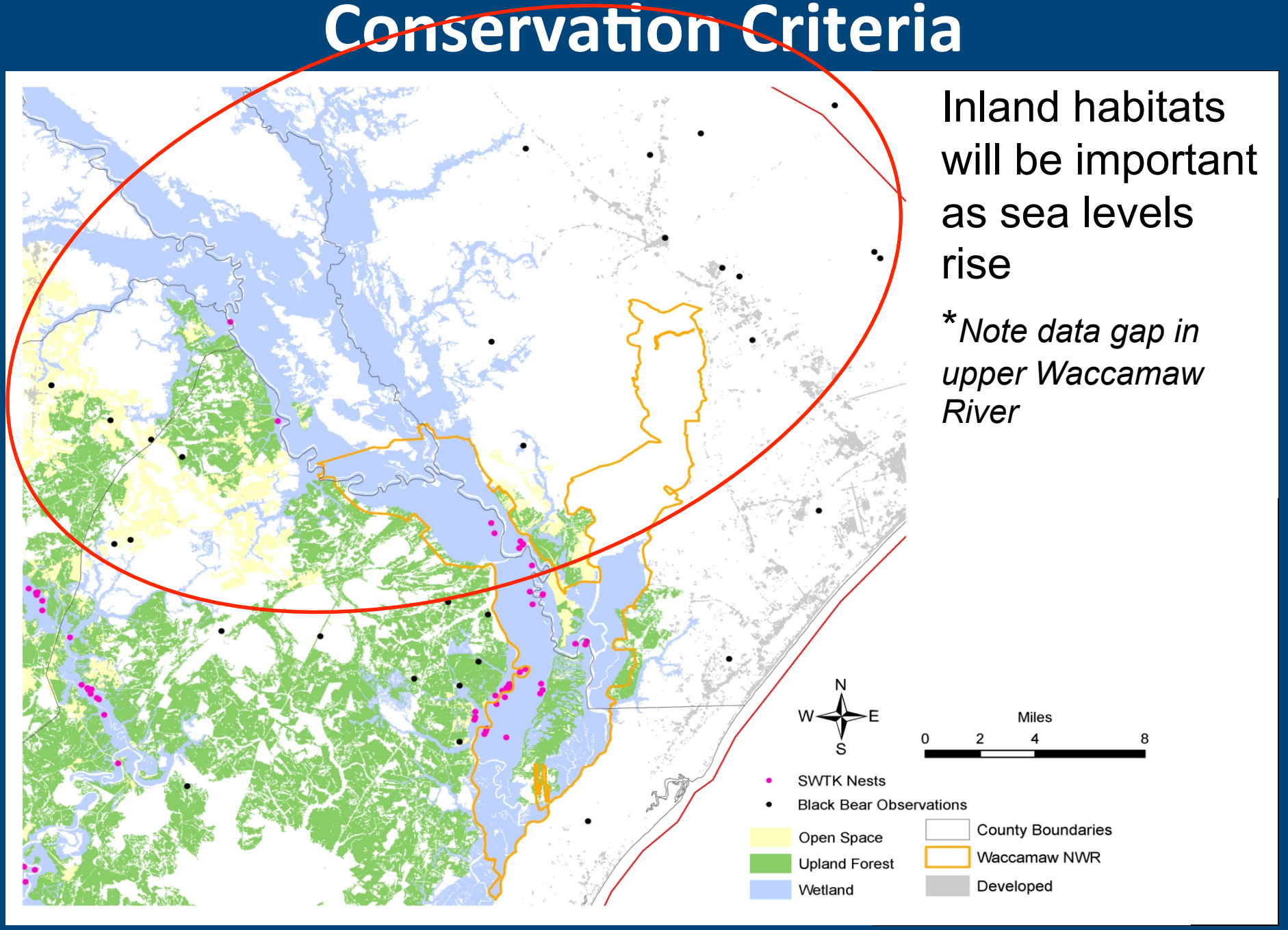
Conservation Criteria



Identify swallow-tailed kite habitat not likely to be impacted by SLR

- Freshwater wetlands
- Close to nest sites

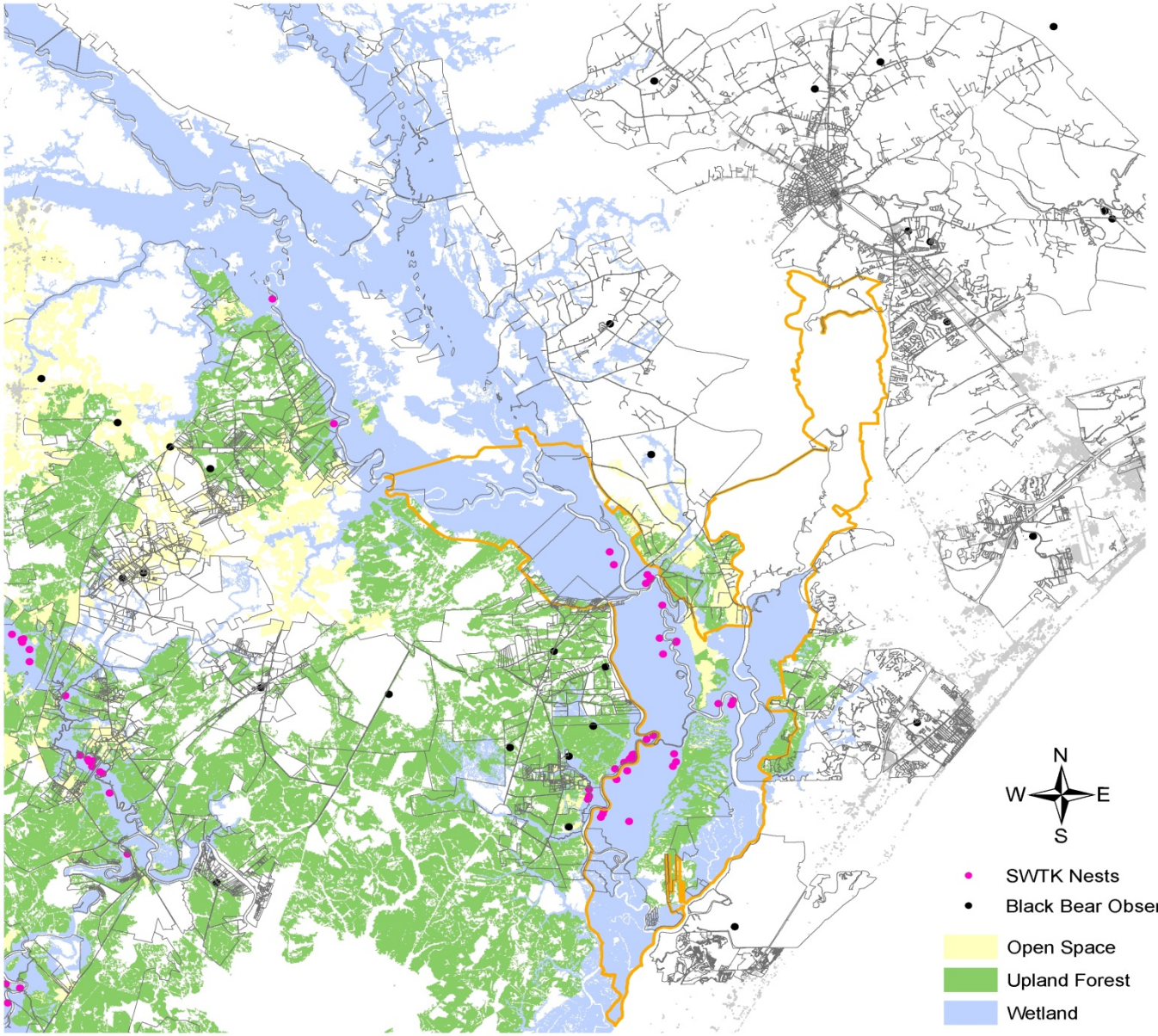
Conservation Criteria



Inland habitats will be important as sea levels rise

**Note data gap in upper Waccamaw River*

Parcel Analysis



Parcels within 1 mile of a SWTK nest site

What's Next?

- Fill species monitoring data gaps
- Integrate more black bear data
- Continue parcel analysis
- Compare predicted impacts with actual habitat change
- Consider refuge boundary expansion

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